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DEPARTMENT OF COMMERCE

BUREAU OF FISHERIES

Economic Circular No. 35 : : : : : : : : : : : : Issued April 29

SHARKS AS FOOD.[a]

With Thirty Recipes.

Dr. Samuel Johnson's dictionary of the English language, published in 1755, defines oats as a cereal eaten by people in Scotland and by horses elsewhere. The tomato, formerly known as the love apple, was as late as the middle of the nineteenth century regarded with suspicion because of its relationship to poisonous herbs. Lack of familiarity with their merits and thoughtless prejudice have retarded the use of products of the sea as well as those of the land. With the more frequent appearance of new sea foods in our markets, the truth of the old saying, "There are as good fish in the sea as have ever been caught," is acquiring a new application. This is especially true of a large family of fishes, representatives of which occur on all shores of the sea and in all climes—the sharks, strong, active, gracefully shaped fishes, varying in length from a few inches to 50 feet or more, which offer a wholesome, palatable, and nutritious food, comparing favorably in dietary qualities with many of the highly prized sea foods.

Many people, indeed, have recognized their value and have utilized them extensively for food. In the countries bordering on the Mediterranean, and in Great Britain, Norway, and Sweden they are well known as valuable and nutritious foods. At Folkestone, England, the flesh of one of the small sharks, salted and dried, is marketed as "Folkestone beef." Until recently their use as food in the United States has been limited principally to seafaring people in scattered localities and to the fish markets of some of our larger cities, but with late interest aroused in new sea foods they are finding a place in our largest fish-distributing centers and have appeared on the menus of some of the leading hotels in several cities.

As already intimated, sharks are of wide distribution, occurring in all seas from the Equator to polar waters, but in greatest abundance in the Tropics. Those, however, taken in the cooler waters of the temperate zones are among the most desirable species for food, and it is from these that the principal supply for the markets of this country is obtained.

Like the cod, squeteague, bluefish, and other well-known fishes, sharks feed mainly on fishes, crabs, mollusks, and other small forms living in the sea, their methods of foraging and capture in many cases being unusual and interesting. The thresher shark uses its whip-like tail, which is as long as its body, to splash the water as it swims round and round a school of fish in ever narrowing circles, crowding

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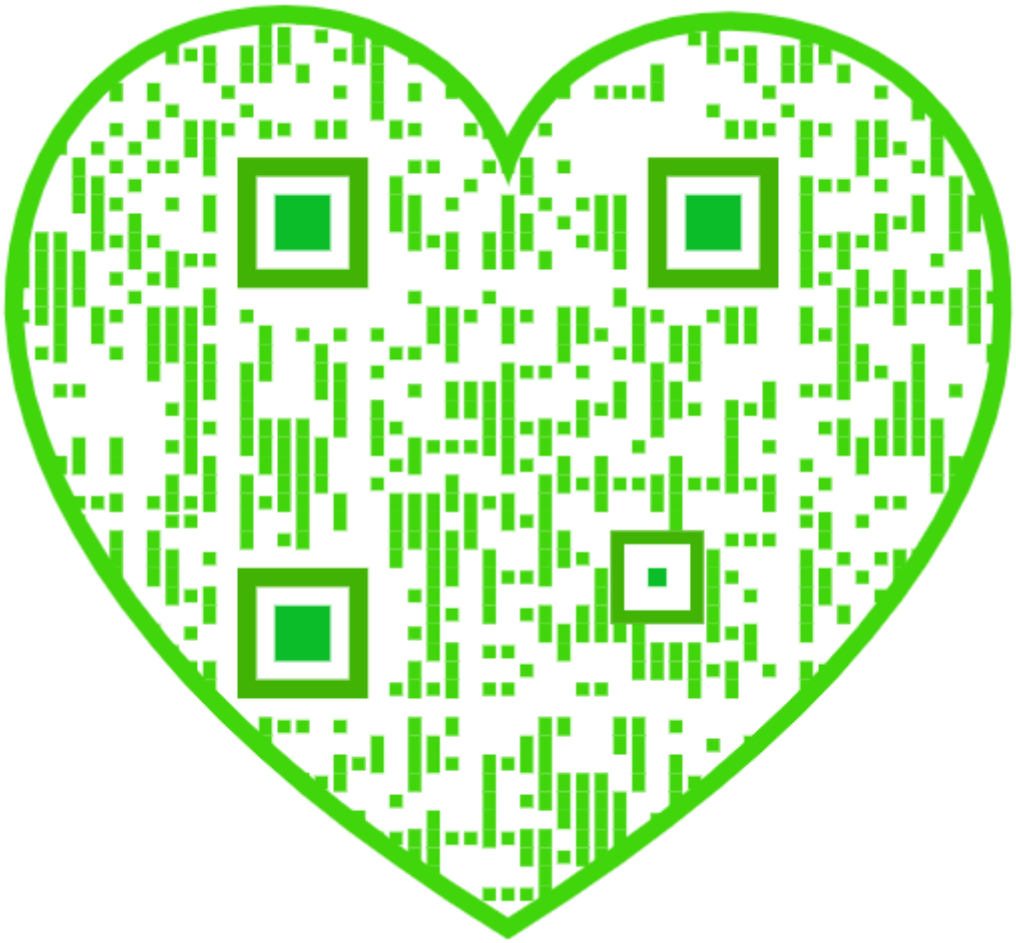

the fish closer and closer together until the moment of attack. The grayfish, sand sharks, and some other species work in schools and do not hesitate to attack the fish taken in the fishermen's nets, the larger forms tearing the nets and liberating the catch. Others, as the smooth grayfish and the blue shark, are noted for their keen sense of smell. Swimming lazily along until it scents its prey, perhaps a crab hidden in a tuft of seaweed, the smooth grayfish turns and rapidly moving its head from side to side begins a systematic search over the bottom, circling closer and closer to the hidden prey, which it seizes with a rush and quickly swallows. The basking shark of temperate waters and the whale shark of the Tropics are the largest of our fishes and at the same time among the most helpless and inoffensive. Their teeth are of little use, food being obtained in the same manner as with the baleen whales, by straining the small plant and animal forms living in the waters of the sea through their highly developed gillrakers. At certain seasons, the first of these—the basking shark—is gregarious, the schools swimming lazily along or lying motionless at the surface of the water with their backs awash. The most serious charge that has been made against the second—the rare whale shark—is that it sometimes rubs itself against the passing small boat, upsetting it, though it makes no attempt to molest the occupants thus unceremoniously cast into the sea.

The economic uses to which these forms may be put are somewhat varied. At one time large quantities of the hides, cleaned, but not tanned, were used for polishing wood, ivory, metal, and the like. With improvements in methods of preparation of sandpaper and emery, these have largely replaced animal hides. However, small quantities of certain classes are still in demand among cabinetmakers, and for other special uses, as in optical fittings. Peculiarity of markings and character of the small, close set, variously sculptured, calcareous particles which cover the skin have adapted some to uses for sword grips, card cases, jewel boxes, and other novelties. The demand for sword grips is at present unusually large and difficult to supply with satisfactory material. Within the last year the Bureau has interested American tanners to experiment in the production of leathers from these hides with excellent results, and there now exists a demand for large quantities of raw materials. In tensile strength leathers tested compare favorably with those made from mammal hides, and the market for these products appears assured. In addition, the livers are rich in a marketable oil, which is of value in dressing leather, soap making, paints, and for medicinal purposes. The yield varies from less than a pint in some of the smaller sharks to about 125 gallons in some of the larger sizes.

The meat of sharks is white, slightly gelatinous, resembling halibut, but somewhat less firm, and compares favorably in food value with other staple food fishes and meats. Russel J. Coles, who has eaten the flesh of many of our sharks, states that the flesh in freshly killed examples of some species has a peculiar odor which can readily be removed by salting. After several hours the meat should be freshened, then parboiled and cooked as any other fish. The flesh of the young sharks and such small forms as the grayfishes is particularly good fresh, but it is as a preserved product that the meat of sharks especially commends itself. Salted and smoked or kippered it is excellent. It may also be salted and dried, flaked or shredded. In some

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parts of the meat the layers of connective tissue are quite close together. These parts may conveniently be run through a meat chopper and the meat used for fish balls, chowders, and the like. Persons in position to smoke the fish as needed will find the mild-cured, hot-smoked product particularly appetizing. Of its qualities, one who has tested it says, "One may compare it with halibut, haddock, cod, and salmon only to record its essential superiority in every particular of tenderness and flavor. In the matter of light smoking, I regard the shark as enormously superior to any fish for this process, for in the samples from which I partook, there was a complete absence of the strong fish flavor which is so hard to eliminate from light-smoked halibut and salmon."

The housekeeper is not restricted to the use of the accompanying recipes, but may employ any method of cooking applicable to large fishes, whether fresh, salt, or smoked. Bacon and salt-pork fats may be substituted for butter in many cases. By some methods of preservation the fish will be found to be so salt as to require considerable soaking; by others so fresh as to require little or none. To freshen salt fish, place them, flesh side down in a large volume of water and leave them there for 12 to 48 hours, according to taste and the size and thickness of the fish. Change the water several times. The extraction of the salt may be hastened if the fish be raised above the bottom of the container by placing it on a wire tray or several clean sticks of wood and, if the fish be thick, by making deep incisions in the flesh. Less freshening is required if the fish be boiled or otherwise cooked in liquid than if used for broiling or frying. Recipes given for canned shark may be used for fresh shark, provided the latter is first boiled until thoroughly done. The cook should use her own discretion with the particular material at hand.

RECIPES.

FRESH SHARK.

1. Shark Chowder.

2 pounds shark.
½ pound salt pork.
2 small onions.
1 quart sliced raw potatoes.
1 quart milk.
Salt and pepper to taste.
Few sprigs of parsley.

Wash the shark thoroughly, cover with cold water, and boil until tender. Flake the fish or cut it into small pieces. Save the water. Cut the salt pork into small pieces and fry until crisp, then remove the pork scraps. In the fat fry the sliced onions, then add the potatoes and a little parsley and cook until done, adding a little water if necessary. When potatoes are soft, add the hot milk and flaked fish, salt and pepper, and heat through. Split Boston crackers or pieces of pilot bread may be placed in the chowder, or served with it.

2. Shark Marseillaise.

2 pounds shark.
2 large onions.
2 tablespoonfuls olive oil.
4 tomatoes.
1 clove of garlic.
1 pinch saffron.
Salt and pepper to taste.
½ glass water or fish stock.

Chop the onions fine and fry them in the olive oil. Add the tomatoes, cut into small pieces, garlic, saffron, salt and pepper, and the water or fish stock. Place the fish cut as usual, in the mixture and allow to boil fast for 15 to 20 minutes. Keep the kettle covered tightly. Remove the fish and place on some slices of French bread, which have been browned in the oven. Boil the liquid down a few minutes so it will not be watery, rectify the seasoning, and pour over the fish.

3. Boiled Shark.

3 pounds shark.
1 onion.
1 carrot.
¼ glass vinegar.
1 tablespoonful salt.
Few grains of pepper.
Little thyme.
1 bay leaf.
1 clove.

Cut the shark into 5 pieces and place in a kettle with the onion and carrot, both sliced. Add the vinegar and seasoning. Cover with water, bring to a boil, and keep boiling slowly for 20 minutes. Drain and place on a platter. Serve with either a cream sauce or any other sauce, such as caper, hollandaise, anchovies, etc.

4. Broiled Shark Maître d'Hôtel.

2 pounds shark.
3 ounces butter.
1 tablespoonful parsley.
Little nutmeg.
Juice 1 lemon.

Cut the shark into steaks, dip into sweet butter or cooking oil, and cook on broiling irons. When well done remove and place on hot platter.

Maître d'Hôtel sauce.

Melt the butter, add the chopped parsley, nutmeg, and lemon juice. Pour over the fish just before serving.

5. Fried Shark, New England Style.

2 pounds shark.
½ cupful fine corn meal.
½ pound fat salt pork.
1 lemon.
Few sprigs parsley.
Salt and pepper to taste.

Cut the fish as usual, season well with salt and pepper, and roll in the corn meal. Fry the fat salt pork in a shallow frying pan, and when crisp remove and keep hot. Place the fish in the pan and fry a nice brown on both sides. Serve on hot platter, with the salt pork over it, and garnish with parsley and slices of lemon.

6. Fried Fillets of Shark Orly.

2 pounds shark.
½ cupful flour.
2 eggs.
1 lemon.
Few sprigs parsley.

Cut the fish into fillets, season well, and roll in flour; dip in beaten eggs and roll in bread crumbs. Fry in deep fat to a nice brown color. Drain and serve garnished with parsley and slices of lemon; a sauce boat of tomato sauce on the side.

7. Shark Sauté Meuniere.

2 pounds shark.
2 ounces butter.
½ cupful flour.
2 lemons.
Few sprigs parsley.

Cut the fish into slices one-half inch thick, season well with salt and pepper roll in flour, and fry in butter. Remove from the pan and place on a hot platter, squeeze the juice of 1 lemon over it add a little more butter in the pan, and when it stops foaming and is a light brown color, pour over the fish. Sprinkle with chopped parsley and serve very hot with quartered lemon.

SMOKED SHARK.

8. Shark Chowder.[a]

2 pounds smoked shark.
4 cupfuls raw potatoes.
1 onion.
⅛ teaspoonful pepper.
1½-inch cube fat salt pork.
2 tablespoonfuls butter.
4 cupfuls scalded milk.
8 soda crackers.

Cut the fish into one-half inch pieces and soak 1 hour in warm water. Change water and boil one-half hour. Cut pork into small pieces and fry out in the pan in which the chowder is to be made; add onion and cook 5 minutes. Then add the

[a] Recipe furnished by Domestic Science Department of Salem College, Winston-Salem, N. C.

potatoes, cut in dice, and 2 cupfuls boiling water and cook 5 minutes. Put in fish, cover and simmer 20 minutes, or until potatoes and fish are tender. Add milk, seasoning, and butter, and bring to boiling point. Place crackers in serving dish and pour chowder over them.

9. Shark Cutlets.[a]

1¾ cupfuls flaked smoked shark.
½ tablespoonful chopped onion.
2 tablespoonfuls finely chopped red peppers.
1 cupful milk.
3 tablespoonfuls shortening.
⅓ cupful flour.
¾ tablespoonful salt.
¼ tablespoonful paprika.

Wash the smoked shark and boil for 20 minutes. Flake it. Cook onion and red pepper with butter for 5 minutes, stirring constantly. Add flour, mixed with salt and paprika, and stir until blended. Add the milk gradually, bring to the boiling point, add the flaked shark, and spread on platter to cool. Shape, dip in egg and crumbs, and fry in deep fat, and drain on brown paper. Arrange on serving dish, garnish with sprigs of parsley, and serve with Epicurean sauce.

Epicurean sauce.

1 tablespoonful Tarragon vinegar.
2 tablespoonfuls grated horseradish.
1 teaspoonful mustard.
½ teaspoonful salt.
Few grains cayenne.
1 cupful whipped cream.
3 tablespoonfuls mayonnaise.

Mix together the vinegar, horseradish, mustard, salt, and cayenne; add the whipped cream and mayonnaise dressing. Beat thoroughly.

10. Shark Balls.[a]

1 cupful smoked shark.
2 cupfuls potato or corn-meal mush.
⅛ teaspoonful pepper.
1 egg.
1 tablespoonful butter.

Wash the fish and shred fine in cold water. Wash, pare, and cut potatoes into pieces of uniform size. Cook fish and potatoes in boiling water to cover 20 minutes, or until potatoes are soft. Drain, add the butter and pepper, and mash fine with a fork. As soon as cool, add the egg, well beaten, and salt if necessary. Shape into balls by tablespoonfuls, leaving outside rough, and fry in deep fat.

11. Shark Cakes.[b]

2 cupfuls smoked shark.
1 cupful mashed potatoes.
1 tablespoonful chopped onion.
Salt and pepper to taste.

Wash the smoked shark and boil for 15 minutes. Shred and mix with the potatoes and onion. Make into small cakes, dredge with flour, and fry in drippings.

12. Shark a la Newberg.[a]

1 pound smoked shark.
¼ cupful butter.
Dash of pepper.
Few gratings of nutmeg.
2 tablespoonfuls lemon juice.
⅔ cupful thin cream.
2 yolks of eggs.

Soak fish in warm water one-half hour, then slowly bring to boil and boil 1 minute. Drain and add to melted butter and cook 3 minutes. Add seasonings, lemon juice with cream and yolks stirred into it, and cook until thickened, stirring constantly.

13. Creole Shark.[a]

1 cupful flaked smoked shark.
1½ cupfuls tomato sauce.
1½ pimentos.
1 green pepper.
1 cupful cold cooked potato.
½ cupful buttered crumbs.

Soak the smoked shark, after flaking, for 1 hour in warm water. Then place in a baking dish in layers with potato cut in small cubes and sprinkle each layer with minced green pepper. Place pimentos, cut in small strips on top, pour tomato sauce (see p. 6) over it, and cover with buttered crumbs. Bake until well browned.

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[a] Recipe furnished by Domestic Science Department of Salem College, Winston-Salem, N. C.
[b] Recipe furnished by Mrs. Kate B. Vaughn.

TOMATO SAUCE.

1½ cupfuls tomato.	1½ tablespoonfuls corn starch.
1 slice onion.	½ teaspoonful salt.
3 tablespoonfuls butter or meat drippings.	⅛ teaspoonful pepper.

Cook onion with tomato 15 minutes, strain and add to butter and cornstarch, cooked together; add seasoning, and let boil 3 minutes.

14. SHARK PUFF.[a]

½ cupful smoked shark.	1 tablespoonful butter.
1 cupful (heaping) potato.	2 eggs.
4 tablespoonfuls milk.	

Wash and shred fish and cook with peeled and quartered potato in boiling water until tender. Beat with a fork until thoroughly mixed, add eggs, whipped light, and beat into the mixture. Spread evenly, about one-half inch thick, on frying pan greased with salt pork, and cook slowly until a brown crust has been formed. Fold over like omelet and serve.

15. BAKED SMOKED SHARK.[a]

2 pounds smoked shark.	1½ tablespoonfuls butter.
2 cupfuls milk.	⅛ teaspoonful pepper.
1 tablespoonful flour.	

Wash the smoked shark and soak overnight in cold water. Place in a shallow baking pan, and pour the milk over it. Bake 20 minutes in a moderate oven, stirring into the milk, at the end of 15 minutes, the flour, butter, and pepper. When thoroughly done, place fish on platter and pour sauce around it.

16. SHARK SALAD.

2 cupfuls smoked shark.	2 tablespoonfuls green peppers.
2 cupfuls potatoes.	2 cupfuls mayonnaise.
1 tablespoonful onion.	Salt and pepper to taste.
1 cupful celery.	

Wash the smoked shark and boil until tender. Shred when cold, and add to the potatoes, which have been diced. Then put in the minced onion, celery, and green peppers. Mix thoroughly and add the mayonnaise, stirring slightly.

The addition of 3 hard-boiled eggs gives a more nutritious and palatable salad.

SALT SHARK.

17. SALT SHARK CHOWDER.

½ pint picked salt shark.	Salt and cayenne pepper to taste.
1 pint raw potatoes.	1 pint milk.
1 large white onion.	Few tablespoonfuls rich cream.

Pare and thinly slice the potatoes and onion. Place the fish, onion, potatoes, and 1 cracker, crushed fine, in a hot, buttered baking dish. Add the seasoning, cover with hot water, and boil gently for 20 minutes. Add the hot milk and cream and let boil up. Serve with crackers or toasted bread.

18. SALT SHARK HASH.

2 cupfuls salt shark.	1 egg.
2 cupfuls boiled potatoes.	Few slices bacon or pork.

Freshen the fish by soaking overnight and chop fine, or run it through a meat grinder; add the potatoes, which have been minced; mix and moisten with milk in which an egg has been thoroughly whipped. Fry some bacon or pork and use the fat for greasing the frying pan in which the hash is fried brown. Now and then add sufficient fat to keep hash from burning, but not enough to make it greasy. It may be turned like an omelet. Serve hot on platter with strips of bacon or pork.

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[a] Recipe furnished by Domestic Science Department of Salem College, Winston-Salem, N. C.

19. Creamed Salt Shark in Pepper Cases.

¼ pound salt shark.
2 tablespoonfuls butter.
2 tablespoonfuls flour.
Dash cayenne pepper.
1 pint milk.

Soak the salt shark overnight, and shred into fine pieces. Blend the butter, flour, and pepper; add the hot milk, little at a time; cook 2 minutes. Then add the fish and cook until creamy. Select large green peppers of uniform size, cut lengthwise, and remove seeds and veins; pour boiling water over them and scald a few minutes to bring out and preserve their green color. Fill the pepper shells with the creamed shark and cover with the yolk of a hard-boiled egg, rubbed through a sieve or vegetable press. Bake until pepper cases are tender.

20. Salt Shark en Casserole.

1 cupful shark.
1 tablespoonful butter.
1 tablespoonful flour.
1 cupful milk.

Pick into small pieces 1 cupful shark, which has been soaked overnight. Melt the butter, add the flour, and pour in gradually the milk, which has been made hot. Cook until creamy consistency and add the fish. Spread crumbed bread on bottom of casserole, dot with little pieces of butter, add a dash of pepper and possibly a little salt, and pour in the creamed fish while hot. Cover with bread crumbs, dot with butter, and bake in a hot oven until brown.

21. Baked Salt Shark.

1 cupful picked or shredded shark.
2 cupfuls cold mashed potatoes.
1 pint milk.
2 eggs.
Lump of butter size of an egg.
Seasoning of pepper.
Pinch of salt, if necessary.

Stew the picked shark gently until tender. Mix the potatoes with the milk, eggs, butter, and seasoning, and stir the shark in lightly. Turn into a buttered pudding dish and bake about half an hour.

22. Salt Shark au Gratin.

1 pound shark.
1 tablespoonful butter.
1 tablespoonful flour.
2 tablespoonfuls grated cheese.
1 cupful boiling water.

Boil the fish gently for 2 hours, putting it over the fire in tepid water; let cool and mince fine. Make a drawn-butter sauce by cooking together a tablespoonful each of butter and flour and stirring them into a cupful of boiling water until the sauce is thick and smooth. Stir the fish into this, add pepper to taste, and mix with the cheese. Turn into a baking dish, strew with crumbs, bits of butter, and a little more grated cheese, and brown in the oven.

23. Baked Salt Shark with Cheese.

2 cupfuls flaked shark.
1 cupful mashed potatoes.
1 cupful milk.
2 eggs.
1 tablespoonful melted butter.
Salt and pepper to taste
3 tablespoonfuls Parmesan cheese.

Boil for 20 minutes enough shark to make 2 cupfuls of flaked fish; drain and set away until cold. Add the potatoes to the fish and mix well with the milk and the egg yolks, well whipped. Add the melted butter, salt and pepper to taste, and the cheese, which has been grated. Turn into a greased baking dish, sprinkle with grated cheese over the top, and bake to a golden brown. Serve immediately.

CANNED SHARK.

24. Shark Hash.

1 pound can of shark.
1 pint boiled potatoes.
1 teaspoonful butter.
Salt and pepper to taste.

Flake the fish and mix with the potatoes, cut in small pieces. Add the butter, salt and pepper, and turn into a buttered frying pan. Stir until thoroughly heated throughout, then leave long enough to brown on the bottom. Turn out on a platter, brown side up.

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25. Shark Cakes.

1 pound can of shark.
1 pint mashed potatoes.
Salt and pepper to taste.
1 egg.
Salt pork and parsley for garnish.

Drain and flake 1 can of shark. Season the mashed potatoes with butter, pepper, salt, and a little cream; work the fish into this, add a beaten egg, a dusting of flour, and shape the mixture into cakes of the usual size. Fry the cakes in hot fat and serve garnished with a thin slice of fried salt pork on top of each and sprays of parsley.

26. Shark Loaf.

1 pound can of shark.
1 cupful cracker crumbs.
1 egg.
⅔ cupful milk.
Paprika and salt.

Flake the shark, mix with the cracker crumbs and egg, well beaten, and season to taste. Bake for 15 minutes in a buttered dish.

27. Escalloped Shark.

1 pound can of shark.
3 cupfuls stale bread crumbs or 3 cupfuls boiled rice.
1 tablespoonful finely chopped onion.
2 tablespoonfuls butter or other cooking fat.
1 tablespoonful finely chopped sour pickle.
Few grains cayenne pepper.

In the bottom of a baking dish place a layer of bread crumbs or rice, spread over it a small amount of chopped pickle, onion, and fat. Add a layer of fish and another layer of crumbs or rice, and so on. Reserve about half of the fat for a final layer of bread crumbs on top of the dish. Bake until the crumbs are brown.

28. Shark Turbot.

1 pound can of shark.
1 cupful milk or cream.
½ cupful bread crumbs.
2 table poonfuls butter.
1 tablespoonful minced onion.
Salt and pepper to taste.

Drain and flake the shark. Butter a baking dish and spread a layer of the fish on the bottom. On top of this place a layer of bread crumbs, dust with a little pepper and salt, dot with small lumps of butter, and sprinkle with onion, finely minced. Proceed in this way until the dish is full, being sure that the top layer is of crumbs. Pour the milk or cream over top and dot with lumps of butter. Bake for 30 minutes in a rising oven—an oven in which the intensity of the heat is gradually increased.

29. Shark Salad.

1 pound can of shark.
1 cupful finely chopped celery.
2 teaspoonfuls lemon juice.
3 large tablespoonfuls mayonnaise.
1 tablespoonful tomato catsup.
1 teaspoonful prepared mustard.
Dash of red pepper.

Mix together the mayonnaise, catsup, mustard, lemon juice, and red pepper. Add lightly to the fish and celery and serve on lettuce. A boiled dressing might be used in place of the mayonnaise. One cupful diced cucumbers may be substituted for the celery.

30. Shark Salad.

1 pound can of shark.
1 cupful celery.
1 red pepper.
1 cucumber, sliced.
1 head chicory.
1 lemon.
1 onion.
Mayonnaise.

Drain and flake the shark and add to the other ingredients. Mix all lightly with the mayonnaise and garnish with olives.

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